

As farming tilapia is still officially banned in India, permission would need to be sought to import new strains even though the species is a major component of production in the East Kolkata Wetlands.

Fish culture in much of the East Kolkata Wetlands is currently constrained by shallow ponds and inadequate distribution of wastewater although these are being rectified as discussed above. The widespread use of farm-level pumps to fill ponds with wastewater should eventually be unnecessary and this would increase profitability.

Supplementary feed is required to maximize the profitability of semi-intensive fish culture. This is best used later in the growth cycle to enable the fish to continue to maintain a rapid growth rate when they exceed about 100 g individual weight. Natural food alone is insufficient for larger sized fish to continue to grow and increase in weight. Although supplementary feed is used in the monsoon season to

compensate for inadequate wastewater, its effective use is constrained by large pond size and harvest of relatively small-sized fish. The latter is a consequence of labour unions demanding excessive seining of ponds; although it leads to the production of relatively small and cheap fish affordable to the poor, it reduces the potential production and profitability of aquaculture in the East Kolkata Wetlands. The production of higher yields of large-sized fish in at least some ponds would improve the economic efficiency of fish production and at the same time lead to greater economic development and provision of jobs for poor workers. This should be explored through tripartite negotiation between fish producers, farm worker unions and government agencies. A three-stage system of nursing, rearing and grow-out ponds is utilized by some farms but, as discussed above, the most profitable way to farm fish is to stock large fingerlings of 100-200 g (the current size of final harvest) and harvest them only after their growth declines as larger fish fetch 2-3 times higher a price in local markets than small-sized fish.

First culture-based fisheries growth cycle in Lao PDR is overwhelmingly encouraging

Sena De Silva, NACA Director General

The first growth cycle trials for the project *Culture-based fisheries development in Lao PDR* were completed in May-June 2008. Although the rains occurred earlier than normal and restricted harvesting, the results obtained even with a partial harvest are extremely encouraging. All indications are that culture-based fisheries activities (CBF) are going to be adopted by many communities, including by some neighbouring villages acting on their own, and will contribute significantly to their nutritional, financial and social well being in the years ahead.

The objective of this ACIAR-funded project is to develop applied production models to optimize yields from culture-based fisheries in flood plain depressions and reservoir coves, thereby improving food fish availability and income generation. The project is being undertaken in eleven villages in two provinces of Lao PDR.

All fishery communities participating in the project - formed from farming communities with access to water bodies - gained significantly, not only in financial terms but also in the way of community development and well being. Individual communities have met at least once or twice a month and made collective decisions with regard to maintaining stocks, harvesting procedures and dates. They have also agreed on marketing strategies that include fixing a minimum saleable price for individual species of fish, and most important of all, the manner in which the profits are to be shared.

All communities without exception made substantial profits from the first year of activity, and deposited sufficient funds, ranging from 3.5 to 6.5 million kip (US\$1 = 8,700 kip) to purchase fingerlings for the next stocking. The manner in which the rest of the profits were disbursed varies between communities. For example, all households engaged in the fishery activities were allocated a sum ranging from 3.5



Community engagement in harvesting, Thong Van Village.

to 6.0 million kip, depending on the returns, and in some communities those engaged in the activities were also paid a daily wage for their inputs, such as for guarding the stock. The entire village, including those households that were not actively engaged in fishery activities, was allocated 2 to 4 kg of fish per household for consumption, and fish were also contributed to social functions.

In some communities the proceeds from the harvests, after depositing funds for the purchase of new seed stock, were used entirely for community activities. For example, in the Thong Van Village (Paksan District, Borikhamxay Province) the funds were used to upgrade the village temple, and this community plans to use its future profits to upgrade the village school and so on. In other communities, in addition to

sharing the profits amongst stakeholders, a certain proportion was used for community benefits such as the purchase of two hand tractors and repairing the village electricity transformer.

It was also evident that every community involved in the project has been contacted by neighbouring village communities with regard to the possibilities of their commencing CBF activities as well. In this regard two additional communities adjacent to Hoay Xi Village (Van Vieng District, Vientiane Province) have already commenced CBF in cages in the upper reaches of Nam Ngum Reservoir.

There are many factors behind the success of CBF in Lao PDR, which is likely to become a major extensive aquaculture activity in the country, providing significant subsidiary income to rural farmers, improving nutrition and contributing to the well being and harmony of communities. CBF activities in Lao have previously been undertaken in a somewhat under-developed form. The project has brought in some technical improvements, such as in the choice and ratio of species to be stocked, larval to fingerling rearing in hapas in the same water body as a means of reducing mortality of seed stock and engagement and organization of the community into fisher groups. The active participation of fishery personnel, headed by Mr Bounthong Saphakdy, Head of the Fisheries Division, Department of Livestock and Fisheries in the Ministry of Agriculture & Forestry, has facilitated better community organization for conducting the activity, for disseminating the principles of CBF and the benefits thereof, and for effecting inter-community exchange of ideas.

Envisaging the popularity of this activity, the project has begun to address potential bottlenecks in sustaining it. The foremost concern is to ensure that high quality seed stock is available to farmers. In this regard the project, in conjunction with the Department of Livestock and Fisheries, is proceeding to rationalize seed production in key hatcheries such as the Lao-Singapore Fisheries Station in Vientiane Province. In addition, the project is working closely with selected private hatcheries such as Mitsamphanh Hatchery. The seed stock utilized consists of indigenous species such as *Labeo chrysophekadion* (pa phia), which is much preferred by the consumer and commands a relatively high price (15,000 kip/kg) as opposed to exotic species such as silver carp (10,000 kip/kg). The project envisages in developing proper broodstock management plans for such key species in order to assure assist in maintaining seed quality.



Regular community dialogue is a key to success of CBF activities in rural Lao.



Temple improved using CBF earnings, Thong Van Village.

For more information visit the project web page at:

http://www.enaca.org/modules/inlandprojects/index.php?content_id=2.

Revival of abandoned shrimp farms in Krishna District of Andhra Pradesh

National Centre for Sustainable Aquaculture (NaCSA)

Chinnapuram Village in Machilipatnam Mandal of Andhra Pradesh is one among the many villages with a large number of abandoned shrimp farms in Krishna district. Out of the 1200 ha of pond area in the village around 800 ha is abandoned while farmers continue farming shrimp in the remaining area, where average productivity is very low due to poor farming and management practices. Farmers feel lucky if they harvest 50 kg shrimp/ha after four months of crop.

The National Centre for Sustainable Aquaculture (NaCSA) invited Chinnapuram farmers to a field day organized in Penduru (Bantumilli Mandal) during June 2008 (see NACA Newsletter, page 47). After witnessing the success of the Penduru society farmers during the field day, the farmers of Chinnapuram formed a society comprising 39 farmers (65 ponds, 38 ha) and for the first time purchased quality seeds through a joint contract hatchery system where they placed